What is claimed is:

1. A wavelength stabilization control device for controlling a light-wave output by a tunable component in an optical communication system, comprising:

a beam splitting component for splitting the light-wave into a first light-wave and a second light-wave;

a first photo-detecting component for receiving the first light-wave and transforming the first light-wave into a first electric signal;

a second photo-detecting component for receiving the second light-wave and transforming the second light-wave into a second electric signal;

a Fabry-Perot Etalon provided between the beam splitting component and the second photo-detecting component for separating a light-wave including a specific wavelength from the second light-wave; and

an optical filtering component provided between the Fabry-Perot Etalon and the second photo-detecting component for filtering a part of channels of the light-wave including the specific wavelength.

2. The wavelength stabilization control device according to claim 1, further comprising:

a servo component for receiving the first electric signal and the second electric signal and performing signal processing.

3. The wavelength stabilization control device according to claim 1, wherein the tunable component is a tunable laser light source.

4. The wavelength stabilization control device according to claim 1, wherein the beam splitting component is a beam splitter.

5. The wavelength stabilization control device according to claim 1, wherein the optical filtering component is a high-pass edge filter.

6. The wavelength stabilization control device according to claim 1, wherein the optical filtering component is a low-pass edge filter.

7. The wavelength stabilization control device according to claim 1, wherein the optical filtering component is a band-pass edge filter.

8. A wavelength stabilization control device for controlling a light-wave output by a tunable component in an optical communication system, comprising:

a first beam splitting component for splitting the light-wave into a first light-wave and a

second light-wave;

a first photo-detecting component for receiving the first light-wave and transforming the first light-wave into a first electric signal;

a second beam splitting component for splitting the second light-wave into a third light-wave and a fourth light-wave;

a second photo-detecting component for receiving the third light-wave and transforming the third light-wave into a second electric signal;

a third photo-detecting component for receiving the fourth light-wave and transforming the fourth light-wave into a third electric signal;

an optical filtering component provided between the second beam splitting component and the second photo-detecting component for transforming the light-wave spectrum of the third light-wave covering the whole wavelength tuning range of the tunable component into a light-wave spectrum having a non-zero slope; and

a Fabry-Perot Etalon provided between the second beam splitting component and the third photo-detecting component for separating a light-wave including a specific wavelength from the fourth light-wave.

9. The wavelength stabilization control device according to claim 8, further comprising:

a servo component for receiving the first electric signal, the second electric signal and the third electric signal to perform signal processing.

10. The wavelength stabilization control device according to claim 8, wherein the tunable component is a tunable laser light source.

11. The wavelength stabilization control device according to claim 8, wherein the first beam splitting component and second beam splitting component are beam splitters.

12. The wavelength stabilization control device according to claim 8, wherein the optical filtering component is a high-pass edge filter.

13. The wavelength stabilization control device according to claim 8, wherein the optical filtering component is a low-pass edge filter.

14. A wavelength stabilization control method, comprising the steps of:

splitting the light-wave from a tunable component into a first light-wave and a second light-wave;

separating a light-wave including a specific wavelength from the second light-wave;

filtering out a part of channels from the light-wave including the specific wavelength and establishing a reference channel;

transforming the first light-wave and the light-wave including the specific wavelength into electric signals, respectively; and

performing a signal processing to the electric signals.

15. The wavelength stabilization control method according to claim 14, wherein the filtering step is accomplished by using a high-pass edge filter with a cut-off wavelength λ_H to filter out channels with wavelengths smaller than λ_H, and using the channel with center wavelength nearest the cut-off wavelength λ_H as a start channel.

16. The wavelength stabilization control method according to claim 14, wherein the filtering step is accomplished by using a low-pass edge filter with a cut-off wavelength λ_L to filter out channels with wavelengths larger than λ_L, and using the channel with center wavelength nearest the cut-off wavelength λ_L as an end channel.

17. The wavelength stabilization control method according to claim 14, wherein the filtering step is accomplished by using a band-pass edge filter which has a range from λ_H to λ_L to filter out channels with wavelengths outside the range, and using the channels with center wavelength nearest λ_H and λ_L as a start channel and an end channel, respectively.

18. A wavelength stabilization control method, comprising the steps of:

splitting the light-wave from a tunable component into a first light-wave and a second light-wave;

splitting the second light-wave into a third light-wave and a fourth light-wave;

transforming the spectrum of the third light-wave into a spectrum having a non-zero slope;

separating a light-wave including a specific wavelength from the fourth light-wave;

transforming the first light-wave, the third light-wave having the spectrum of a non-zero slope, and the light-wave including the specific wavelength into electric signals, respectively; and

performing a signal processing for the electric signals.

19. The wavelength stabilization control method according to claim 18, wherein the spectrum transforming step is accomplished by passing the third light-wave through a high-pass edge filter covering the whole wavelength tuning range of the tunable component.

20. The wavelength stabilization control method according to claim 18, wherein the spectrum transforming step is accomplished by passing the third light-wave through a low-pass edge filter covering the whole wavelength tuning range of the tunable component.